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Rethinking the Basis of Diversification in the Digital Economy

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Abstract

A diversified firm needs to decide which businesses to include in its business portfolio and how to achieve synergies across those businesses so that its corporate performance is greater than the sum of individual performances of its businesses. We argue that traditional conceptualizations and underlying constructs of diversification—which have been developed and refined at the heights of the industrial economy—may be inadequate and inappropriate for understanding diversification, and diversification-performance relationship in the digital economy. We propose a knowledge-based conceptualization of diversification, and develop a research framework for understanding diversification-performance relationship in the digital economy. We argue that knowledge-based diversification strategies, which build and leverage related product, customer, managerial, and IT knowledge across business units, can lead to superior performance.

Introduction

Diversified firms are those firms that simultaneously compete in multiple products or services (Pitts & Hopkins, 1982), multiple markets (Gort, 1962), or multiple industries (Berry, 1975). Diversification has been a central concept that serves as the basis for our understanding of firm scope. Many researchers have been concerned with understanding diversification patterns and the link between diversification and corporate performance (Hoskission & Hitt, 1990; Ramanujam & Varadarajan, 1989). They hypothesized that firms build on their existing resources to diversify, and that related diversified firms outperform unrelated diversified firms. Traditionally, relatedness has been defined in three ways:

Product relatedness

Product related diversifiers are those firms that share raw materials, plants, and production equipment across their businesses (e.g., Rumelt, 1974; Davis & Duhaime, 1992; John & Harrison, 1999).

Market relatedness

Market related diversifiers operate in similar geographic markets; serve similar types of customers (e.g., industrial versus consumer) and customer accounts (e.g., big versus small); and use similar distribution systems (Capron & Hulland, 1999; Markides & Williamson, 1994; Rumelt, 1974; Stimpert & Duhaime, 1997).

Human resource relatedness

Human resource related diversifiers are those firms that have similar occupational profiles (percentage distribution of employees by occupational categories) across their business units (Farjoun, 1994).

These relatedness constructs tend to capture relatedness of tangible aspects of a firm's resources. For example, product relatedness captures similarities of raw materials, plants, and equipment used across a portfolio of products rather than similarity of underlying knowledge bases of the products. Likewise, market relatedness focuses on similarity of types of customers or sizes of customer accounts rather than similarity of the underlying customer needs, preferences, and behaviors across a product portfolio. Even in the case of human resource relatedness construct, which seemingly focus on relatedness of an intangible resource, the focus is on similarity of occupational profiles, which are tangible aspects of firm's human resources, rather than similarity of skills, expertise, and values of employees, which are intangible aspects. Therefore, we will refer to the traditional definitions of relatedness as *tangible resource-based relatedness.*

Empirical tests of the link between tangible resource-based relatedness and performance have produced equivocal results (Chatterjee & Wernerfelt, 1991). While some studies found a significant link, others find no links at all (Hoskission & Hitt, 1990; Robins & Wiersema, 1995). Researchers called for use of rigorous theoretical and methodological approaches to resolve the equivocal results (Hoskission & Hitt, 1990; Ramanujam & Varadarajan, 1989). While we agree with prior calls for addressing theoretical and methodological weaknesses in diversification research we argue that they should be done so in the context of a shift away from the industrial economy.

In the industrial economy, products were mass-produced and targeted to markets, which were assumed to be homogeneous groupings of potential customers with uniform demand characteristics (Brooks, 1995). Dominant business logic and competition were based on maximizing scale economies and minimizing transaction costs. Under these conditions, related diversifiers that use same raw materials and production facilities across products and leverage same marketing-mix and distribution channels across markets could well outperform unrelated diversifiers that forgo those scale economies. However, some key underlying assumptions of the industrial economy are no longer valid due to changes in nature of products and markets, advances in

manufacturing and information technologies, and changing value drivers of performance and competition.

In the digital economy, products are non-uniform outputs containing tangible manufactured goods fused with intangible embedded knowledge and a set of associated service activities. Each customer is a "market segment of one" who has distinct requirements to be fulfilled. Flexible manufacturing and information technologies have reduced production and transaction costs. Value drivers of performance are less based on tangible factors but are more dependent on intangible, intellectual factors (Stewart, 1997). The basis of competition shifts from tangible resources to accumulation and deployment of knowledge-based intangible resources (Bettis & Hitt, 1995). Consequently, synergy effects of tangible resources neutralize, and superior performance potential of tangible resource-based relatedness diminishes. Therefore, we need new theories and constructs in order to understand diversification-performance relationship in the digital economy.

Knowledge-based relatedness

According to resource-based view, resources form the basis for related diversification (Wernerfelt, 1984). Due to variance in strategic importance of the underlying resources, not all types of related diversification can lead to superior performance. Only those related diversification moves which leverage valuable, rare, imperfectly imitable, and unsubstitutable resources hold the potential for superior performance (Barney, 1991). Tangible resource based relatedness cannot lead to superior performance because tangible resources are readily available to all firms in competitive factor markets in the digital economy (Spender, 1996). Since they are relatively more valuable and rare, but more difficult to imitate or substitute, knowledge-based intangibles are the most strategic resource of the firm (Grant, 1996), and they should form the foundation of new diversification theories and relatedness constructs (Sampler, 1998).

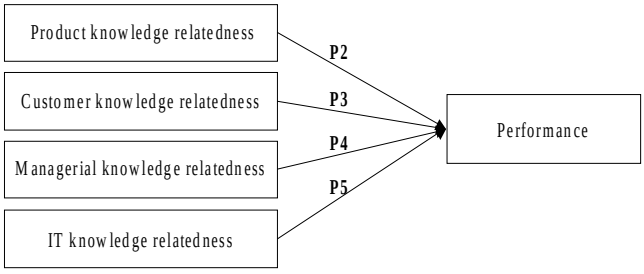
We define knowledge-based relatedness as the '*degree to which underlying knowledge resources of a particular business of the firm are applicable or have relevance across other businesses within the firm.'* This definition recognizes that not all types of relatedness lead to superior performance. It focuses on synergies arising from relatedness of strategically important knowledge resources rather than synergies arising from tangible resources, which are still necessary for efficiency purposes, but no longer sufficient for superior performance. Hence:

Proposition 1*: Knowledge-based relatedness will provide additional explanators of variance in performance—beyond the variance explained by tangible resource-based relatedness.*

Dimensions of knowledge-based relatedness

Development of the knowledge-based relatedness construct requires identification of strategically significant types of knowledge that reside in a firm. We use the traditional building blocks of strategic thinking, i.e., products, markets, and managerial processes, as a starting point (Gilmore & Pine II, 1997a). However, we redefine, expand, and transform them in order to account for the changes in the economy. Furthermore, we include IT knowledge as a key dimension of a firm's knowledge base. We propose *product knowledge relatedness*, *customer knowledge relatedness*, *managerial knowledge relatedness*, and *IT knowledge relatedness* as key determinants of a diversified firm's performance, as depicted in Figure 1. In contrast to what is typically done in most diversification studies, we focus on strategic rather than operational level relatedness in all four dimensions (Grant, 1988).

Figure 1. Knowledge-based relatedness and firm performance



Product knowledge relatedness

We define product knowledge relatedness as the '*degree to which product designs, process characteristics, and human expertise in a particular business of the firm are applicable or have relevance across other businesses within the firm.'*

Product knowledge of the firm is manifest in its product and process platform designs and human resources (Meyer & Lehnerd, 1997; Robertson & Ulrich, 1998; Sawhney, 1998). Product platform is a set of subsystems and interfaces that allow development and production of a family of derivative products (Meyer, 1997). It is a collection of common elements, especially the underlying core technology, implemented across a family of products (McGrath, 1995). Process platform is composed of processes and technologies used in manufacturing a family of products (Meyer & Zack, 1996). It allows reuse of related process components and architectures across products and services (Malone, Crowston, Lee, Pentland, & et.al, 1999). For example, 3M leverages the same coating and bonding processes across ninety-five percent of its 40,000 product offerings (Galbraith, 1983). Human resources carry especially tacit aspects of firm's product knowledge such as the tradeoffs between distinctiveness and commonality of products,

designs, production techniques, and technology applications (Robertson & Ulrich, 1998).

Product knowledge relatedness can enable a diversified firm to share product designs, subsystems, components, manufacturing processes, and human skills and expertise across its business units. Reuse of existing product knowledge reduces development, tooling, and manufacturing costs, speeds up new product development, and allows the firm to rapidly address new market opportunities (Meyer, 1997). It also improves quality of products. A performance improvement in an underlying product or process platform ripples through all derivative products (Sawhney, 1998). On the other hand, firms whose new offerings do not leverage existing product knowledge suffer from high costs and low margins (Meyer, 1997) because new technologies and processes often require major investments in research, design, engineering and manufacturing (Nobeoka & Cusumano, 1997). Advantages arising from product knowledge relatedness may be sustainable because product knowledge is not easy to observe or replicate. While competitors can disassemble firm's products and reengineer what they are and how they work, they can rarely learn how they were produced or the sources and degrees of efficiency and effectiveness with which they were produced. The causal ambiguity associated with firm's product knowledge provides a source of superior performance (John & Harrison, 1999). Thus:

Proposition 2*: Product knowledge relatedness of a firm's business portfolio is* positively *associated with firm performance.*

Customer knowledge relatedness

Customer knowledge refers to the knowledge that the firm builds through a learning relationship with customers and end consumers with whom it does business (Woodruff, 1997). It includes knowledge of needs, preferences, buying behaviors of customers; why they purchase products and services, which attributes they value, and what consequences they hope to get by using them; as well as knowledge of customers' businesses (Stewart, 1997; Woodruff, 1997).

Similarity of customer knowledge across product or service markets constitutes an important base of relatedness (Farjoun, 1998). In serving customers, firms acquire knowledge about expressed and latent needs of their customers, which they can subsequently use in cross-selling other offerings or developing new ones. However, opportunities for customer knowledge synergies exist only when customers have similar requirements and exhibit similar behavior across different businesses (Gilmore & Pine II, 1997b). Therefore, we define customer knowledge relatedness as the '*degree to which customer knowledge in a particular business of the firm is applicable or have relevance across other existing businesses within the firm or in the development of new businesses.*'

Diversification based on customer knowledge relatedness may result in positive performance effects. For example, firms which discover multiple needs of their existing customers to offer new services are valued higher by the stock market than firms which only share factors of production across their exiting services (Nayyar, 1993). Markets with similar types of customers allow redeployment of intangibles such as general marketing expertise, brands, and sales forces among the markets, which in turn, positively impacts on revenue-based synergies (Capron & Hulland, 1999). On the other hand, diversified firms serving different types of customers have minimal opportunity to leverage their existing customer knowledge and other marketing resources across different products and services. Hence, their performance may suffer from high diversification costs. For example, in the banking industry, mixing institutional and individual customer segments, which have limited similarities, has a negative impact on performance (Ramaswamy, 1997). Thus:

Proposition 3*: Customer knowledge relatedness of a firm's business portfolio is* positively *associated with firm performance.*

Managerial knowledge relatedness

Managerial skills and knowledge of a diversified firm are manifest in its corporate level functions. They are reflected in the processes through which the diversified firm coordinates and controls its business units (Grant, 1988). The most strategic managerial processes include resource allocation, strategy formulation and coordination, performance setting and monitoring (Grant, 1988); relationship management (Ring & Van de Ven, 1994), risk, reward, innovation, and autonomy orientation (Chatterjee & Wernerfelt, 1991); and human resource management processes (Saxton, 1997). Businesses that are seemingly unrelated in product or customer knowledge may be related in terms of the managerial processes by which they are governed (Prahalad & Bettis, 1986).

Corporate level managerial skills and knowledge are key to creation and sustenance of a diversified firm's knowledge bases because individual business units tend to under-invest (Prahalad & Hamel, 1990), or make sub-optimal choices in the absence of a dominant logic imposed by top management (Robertson & Ulrich, 1998). Ultimately, diversification can be worthwhile if corporate management adds value in such a way that businesses in the portfolio are worth more under the governance of a single firm than they would be under the governance of separate firms (Goold & Luchs, 1993). Therefore, we define managerial knowledge relatedness as the '*degree to which managerial skills and knowledge in a particular business are applicable or have relevance across other businesses within the firm.*'

Firms can successfully diversify into new businesses if they can use their existing managerial knowledge,

routines and repertoires in integrating and managing knowledge domains of the old and new businesses (Nayyar, 1992; Nayyar, 1993). Firms which have managerial processes in place for coordinating and sharing valuable, rare, imperfectly tradable, and inimitable resources across their businesses are more likely to derive benefits from diversification (John & Harrison, 1999; Markides & Williamson, 1996). For example, alliance partners who have similar organizational structures, human resource policies, decision-making patterns, organizational culture, and accounting and information systems achieve positive alliance outcomes (Saxton, 1997). In merged businesses, similarity of managerial resource allocation decisions lead to positive performance outcomes (Ramaswamy, 1997). Thus:

Proposition 4*: Managerial knowledge relatedness of a firm's business portfolio is* positively *associated with firm performance.*

IT Knowledge Relatedness

IT constructs have rarely been included in models of diversification-performance relationship. However, evidence emerging from the IS literature indicates that IT constructs may add significant explanatory value to models of diversification-performance relationship. For example, there is a significant relationship between levels of IT use and diversification (Hitt, 1999). Firms diversifying into related lines of businesses tend to invest more in IT (Dewan, Michael, & Min, 1998), and performance of diversified firms are significantly associated with IT investments (Bharadwaj, Bharadwaj, & Konsynski, 1999). These findings support the assertion that IT moves center stage in the competitive landscape of the digital economy, and suggest that diversification researchers need to develop constructs capturing strategic importance of IT resources and capabilities, and include them in models of diversification-performance relationship.

Resource-based analyses of various IT resources indicate that the most strategic IT resource of the firm is *IT knowledge,* which resides in managerial IT human resources and IT infrastructure of the firm. Managerial IT human resources carry firm-specific skills and expertise that are gained during conceptualization, development, and exploitation of IT systems. They include abilities to recognize, understand, and appreciate business needs; work with business managers, customers, suppliers, and partners; develop appropriate IT applications; coordinate existing IT activities; and identify future IT needs of businesses (Mata, Fuerst, & Barney, 1995). IT infrastructure is a set of information and technology designs, subsystems, interfaces and components that form a common structure, which supports existing business processes, products and services, and enables development of new ones. Clearly, managerial IT skills and expertise are key to creating integrated and compatible IT infrastructures across the firm.

IT knowledge carried by IT managers and IT infrastructures of the diversified firm develops over long periods of time through socially complex and causally ambiguous working relationships among IT managers, business managers, customers, suppliers, and partners of the firm (Broadbent & Weill, 1997). While competitors may observe hardware and software commodities used in creation of firm's IT infrastructure, they cannot easily identify and imitate skills, expertise, strategic deliberations, and social processes that shape the IT infrastructure. Therefore, the IT knowledge carried by IT managers and IT infrastructure of the firm is imperfectly imitable, and hence, it may serve as a source of sustained superior performance (Mata et al., 1995).

In the context of diversified firms, IT knowledge residing in individual business units can enable those business units to achieve superior performance. However, islands of IT knowledge at business unit level do not suffice to achieve superior performance at the corporate level. Synergy realization at the corporate level requires transfer and leverage of related product, customer, and managerial knowledge across business units. Transferability of these intangibles depends on integration and compatibility of IT systems across business units, which in turn depend on the extent to which IT knowledge of business units are related.

We define IT knowledge relatedness as the *'degree to which information and technology designs, subsystems, interfaces and components are compatible across business units; and the degree to which managerial IT skills and* expertise *used within a particular business unit are also relevant and applicable across other business units.'* Compatibility of IT infrastructures and relevance and applicability of managerial IT skills and expertise enable the firm to exchange and reuse core technologies and related product, process, and managerial knowledge across business units. Firms with unrelated managerial IT skills and expertise, and fragmented and incompatible information and technology structures, on the other hand, may forgo potential operational efficiencies and knowledge synergies across their businesses. Thus:

Proposition 5*: IT knowledge relatedness of a firm's business portfolio is* positively *associated with firm performance.*

Conclusions

In this paper, we contended that in the digital economy diversified firms cannot add value to their businesses by just exploiting synergies arising from tangible resource-relatedness. We argued that synergies arising from knowledge-based relatedness hold a higher potential for superior performance. We defined and articulated key dimensions of the knowledge-based relatedness construct. We proposed a research framework for understanding diversification-performance

relationship in the digital economy. Drawing on both information systems and strategic management literatures, we defined IT knowledge relatedness and proposed it as a key determinant of diversified firm's performance. Further work is required for operationalization of the constructs and validation of the propositions.

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